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SUBSISTENCE ECOLOGY OF THE PASTORAL GABRA
—A Preliminary Report

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ABSTRACT

This paper deals with the subsistence pattern of the pastoral Gabra in northern Kenya. The author describes it in relation to the natural environment and several neighbouring pastoralists. Although the Gabra originated from several neighbouring pastoralists, they do not have friendly relationship with them except the Boran. The natural environment of the Gabra territory is extremely dry, with low annual rainfall, and the surface water is distributed unevenly. Cultivation is impossible in such an arid area, so that the Gabra keep livestock and depend their subsistence almost entirely on the product of their livestock such as milk, meat and blood. The Gabra seldom hunt wild animals. In the following the author describes aspects of frequent nomadic movement of their residential and herding area for effective livestock management. He also describes the diet taken by the Gabra in a main camp. Based on this, it is pointed out that the subsistence basis of the Gabra is the products of livestock, and that the most important livestock for the Gabra diet is not a large one, like cattle or camels, but goats.

INTRODUCTION

The Gabra inhabit an arid lowland of northern Kenya. They belong to the Galla group of Eastern Cushitic. The Gabra make their living from the products of livestock; camels, cattle, sheep and goats. In addition to these four kinds of animals, a small number of donkeys are kept for transportation.

The author conducted an investigation of the Pastoral Gabra for 6 months, from August 1980 to January 1981. The investigation was focused on their mode of life, namely their pastoral way of life.

Before the author's study, there was only one anthropological study of the Gabra, which was carried out by W. I. Torry in Herbert H. Lehman Collage between 1969 and 1971 (Torry, 1973, 1976). He presented a comparative analysis of ecology and social organization of the Gabra. He also paid his attention to the ecology of their livestock. The Gabra keep many camels as the Rendille do (Sato, 1980a), which is characteristic among the neighbouring pastoralists who are mainly cattle herders.

From the study of the Gabra, we can get many data which can be compared with that of the Rendille, who live in the similar environment.

After the general survey of the Gabra country, the author carried out an intensive study in two main camps; one was located in 10 km south of North Horr, and the other, situated in the north of Uranura water point, 40 km west of North Horr. For the first two months, the survey was carried out with Dr. R. Harako in Meiji University, and then by myself (Fig.1,2,3).

The Gabra inhabit the area which covers from eastern side of Lake Turkana to eastward, and southward to Marsabit. Northern part of the

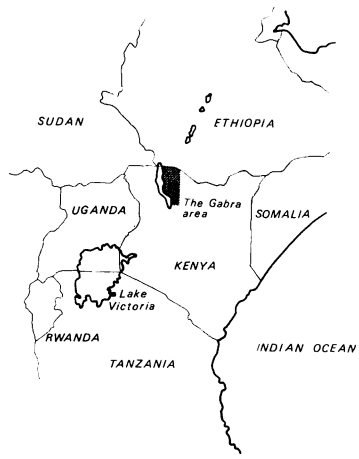

Fig. 1. Map of East Africa.

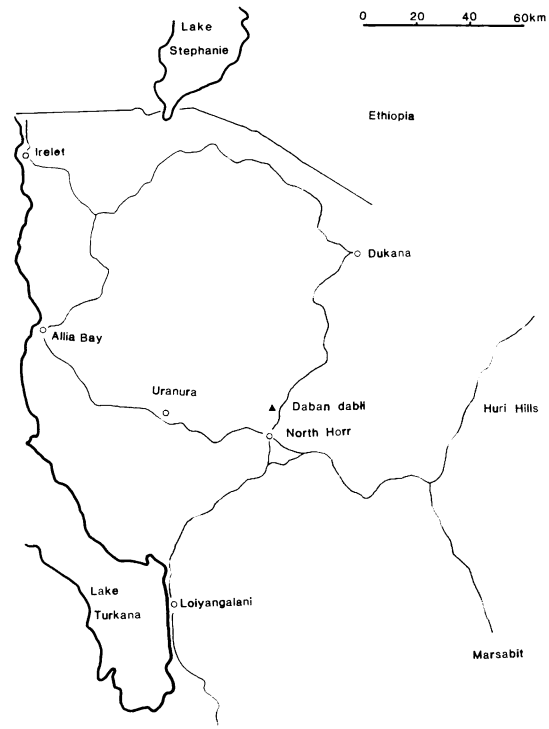

Fig. 2. Map of the Gabra area.

Gabra territory includes Sidamo Province of Ethiopia. The Gabra occupy about 135,000 km² north of Marsabit District in Kenya and southern Sidamo Province of Ethiopia. Although there exsists a considerable number of the Gabra inhabitants in Ethiopia, they have a feeling that the area in Ethiopia is not their heart region. The Gabra people generally call their land chalbi. Chalbi means the land of white soil, and the term implies the area surrounded by Marsabit, Dukana, Ileret and Loiyangalani. The Chalbi Desert covers the major part of this area of white soil. On the contrary, they call the Boran land koticha which means the land of black soil.

According to Torry (1973, 1976), a population of the Gabra amounts approximately to 20,000, and they occupy 52,000 square miles (approximately 135,000 km²) of land. Hence the population density of the Gabra is 0.15 person/km².

In the Gabra society, all children belong to their patrilineal groups. Several patrilineal descent groups (lineages) constitute a clan. A phratry is comprised of several clans. All married men are livestock owners, and several married men and their families construct their huts together to form a single main camp.

The Gabra society is composed of five semi-endogamous phratries: Algana, Gara, Sharbana, Odola, and Galbo. Algana and Sharbana are regarded as the groups originating from the Boran, whereas many clans in Galbo and Odola are considered as the peoples originating from the Rendille. The origin of Gara is ascribed to pastoralists of Somali group. Each phratry maintains the age grade system. Important men of a phratry, whose function is to arrange an installation ceremony of the age

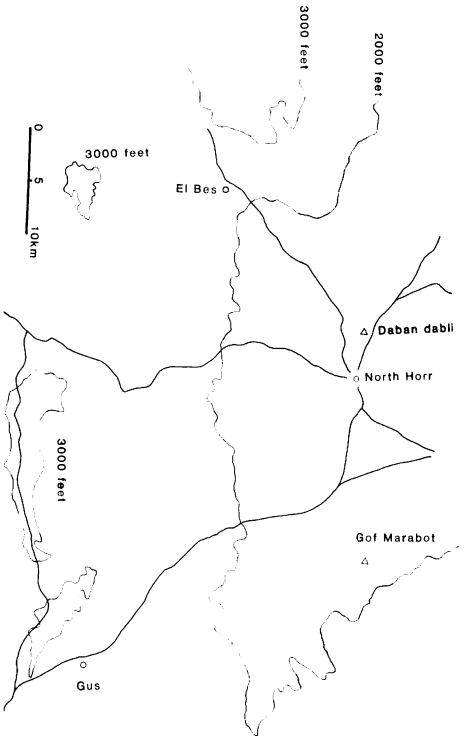

Fig. 3. Map of the study area.

grade, live together in the main camp called ya'a. The function of the ya'a is to arrange installation ceremony of the age grade.

Thus each phratry originated from different pastoral peoples, but is not antagonistic to each other and an inter-marriage between phratries is contracted occasionally.

The territory of the Gabra, is faced with the territories of several other pastoral peoples. From Ileret, the north western frontier of the Gabra, to Ethiopian regions, the Dasanech reside mainly by herding their cattle. They belong to the Oromo group of Eastern Cushitic. A population of the Dasanech is about 5,000. the Gabra call them Shankilla or Galaba, and regard them as their sworn enemy. Torry stated that many sheep and goats of the Gabra were pastured in the eastern side of Lake Turkana and the area between Ileret and Dukana, where cattle of the Gabra were also grazed. The Gabra have been driven away from many good pasturelands, ever since the Dasanech acquired guns. Since then, the hostility between the Gabra and the Dasanech has continued bitterly. When the Gabra people supply their livestock with water from the wells, which are located in the west of North Horr, several men armed with guns accompany the herd to protect them from the enemies. During the period of investigation, one of the main camps of the Gabra, located at approximately 50 kilometers west of North Horr, was once attacked by the Dasanech.

The author observed a Rendille man who married a Gabra woman and settled in one of the main camps near North Horr. He also observed that

one camp consists of only Rendille men. At present the Gabra and the Rendille seem to behave neither with hostilities nor with cooperation to each other. The Gabra people do not have courtesy to the Rendille.

The Elmoro, a branch of the Masai group of Para-Nilotic, inhabit Loiyangalani and are engaged in fishing in Lake Turkana. Stock-herding is not so important for the Elmoro that the Gabra do not feel familiar with them.

Recently, the Turkana, a branch of the Teso group of Para-Nilotic have advanced near to Loiyangalani, but there is no direct contact between the Gabra and the Turkana so far.

The Boran belong to the Galla group of Eastern Cushitic, and are in alliance with the Gabra. The Gabra speak the Boran language. In the northern part of Marsabit, these two peoples live in close contact. Around North Horr, they intermarry frequently, so that the Boran people are sometimes seen in the Gabra camp. Social organizations of these two pastoralists are very similar to each other.

In this paper, the author first indicates the fact that the Gabra make their living only from their livestock, without utilizing modern techniques, agricultural products, and hunted game and then inquires into their adaptation to such severe natural environment. Furthermore, their residential patterns and movements will be discussed in the relationship with the livestock herding.

NATURAL ENVIRONMENT

Topography

The Chalbi Desert, which has no conspicuous ups and downs, occupies the major part of the Gabra area. The Gabra utilize mountainous, well-grown areas to collect woods for the frames of their huts. The Gabra in the investigated areas can extend satellite camps as far as to Huri Hills, and they also go to Ashe Hills east of Loiyangalani, north east of Mt. Kulahl, in order to collect materials for their huts. One passes through Huri Hills as he travels from Ethiopia to the Gabra territory in Kenya. Many hillocks in the Gabra territory are covered with lava. Small hillocks with small craters on their tops are scattered in Marsabit District. Such small hillocks are called with a prefix gof, such as Gof Marabot, Gof Boro, Gof Dakara, etc.

Climate

The amount of rainfall is extremely small in the Gabra region, less than 8 inches (about 200 mm) annually (Torry, 1973). The period of rainfall is restricted. Rainfall is confined to two particular seasons, one between March and May, and the other between September and November, as has been mentioned before.

Rain falls so unevenly over the area that people cannot predict which area receives more rain. During the investigantion period, the author had rain only for seven days (Table 1). The rainfall of the latter half of the year 1980 was larger in amount in northern area of North Horr than in any other areas. As rain falls unevenly on the whole area, waterholes and pasturage are also distributed unevenly. When rain comes, water flows into the Chalbi Desert, and many waterpools to supply water for the Gabra are made for a certain period. When many waterpools appear, motor cars cannot pass through the Chalbi Desert because of momentary rivers, called laga, flowing into there. People avoid to set up their main camps near such places where water flows after rain. If the amount of rainfall increases rapidly, many sheep and goats will die by a flood.

Table 1. Date of rainfall in October and November, 1980

date	area
Oct. 30	North Horr
31	North Horr
Nov. 11	study site, 10 km south of North Horr
15	10 km south of North Horr
21	10 km south of North Horr
26	North Horr
29	North Horr

Temperature of the area does not fluctuate very much throughout the year. An average maximum temperature in one day is about 40° C. and an average minimum is 23°C. South-western wind blows constantly at about 5m/sec. in the Gabra territory. Sands are blown off as in a small tornado. The Gabra call a small scale tornado bube.

As rain falls very little in the Gabra area, people have a great desire of rainfall. It is natural that the Gabra look at the clouds in the sky with a hope of rain. The Gabra generally call the clouds dubas. Comulonimus is called selam. And Nimbostratus is called waqa. Nimbostratus brings a heavy rain to Gabra land. Waqa also means "God" in the Boran language. By this word waqa, the people's desire for water is well understood.

Vegetation

In the Gabra territory, there is no river with running water all the year round. The area belongs to what is called stony semi-deserts. S. Sato (1980a) reffering to Lind and Morrison (1974) classified the vegetation types of the Rendille land into five types as follows:

(i) Forest
(ii) Wooded grassland
(iii) Bush and thicket
(iv) Semi-desert grassland
(v) Desert

Both the extent of the survey area and the length of the investigation period were not sufficient for a general description of the vegetation in the Gabra territory. In this section, the author tentatively describes the vegetation of the survey area as follows.

(A) Lava desert
(B) Desert
(C) Shrub bush
(D) Grassland
(E) Riverine wooded belt

Hillocks covered with small lavas are classified as (A). As for trees, it is needless to say that there are a little more growing points of shrubs or grasses in (A) than in (B). The lava zone is not as a pastureland, but as merely a route to take their sheep and goats to good pasturelands. There are few grown plants of any kind in area (B), Desert zone. Usually this area is flooded shortly after a heavy rain, and then, the soil become as hard as a board. But as there are few rocky places in the Chalbi Desert, certain grasses start to grow soon after the rain. This area is utilized as grazing land of cattle, sheep and goats. Furthermore, small waterpools, made after rain, are utilized as watering points both for livestock and the people. Area (C) is mostly seen in the surrounding parts of the Chalbi Desert and is composed of shrubs like

Salsola dendroides and Dasysphaera prostrata and other kinds of dwarf shrubs. This area is often used as a pastures of camels, cattle, sheep and goats. Since cattle and sheep are grazers, rather than browsers like camels and goats, they are herded more intensively in area (D) than in (C). Small temporary rivers (laga) are formed whenever rain comes to area (E). Trees and shrubs grow in a narrow fringing area along the laga. Phoenix reclinata happens to grow in this area. In the daytime, trees on river banks make shadows, where sheep, goats, and herders themselves can rest and take a nap.

Animals

Because of the scarcity of rainfall and the poor vegetation, the fauna is not rich in this area. Only a small number of Thomson's gazelles and Grant's gazelles iddi, oryx sahla, gerenuk kuguft, Grevy's zebra and Common zebra hale didda, and giraffe sotowa inhabit the Gabra area.

Except for Zebra, the Gabra eat the meat of these animals favoritely, but hunting is not regularly carried out among the Gabra. The skin of giraffes is used for cattle milk containers, after their meat and fat are eaten. The giraffe is an useful animal for the Gabra. In dry seasons, herbivores are apt to come to waterpools, such as that in North Horr, to drink water at night.

Lions nyench, come to the waterpools in search of a prey. The people also come frequently, to water their livestock. However, they hardly encounter lions near the water points. Although not many lions live in the Gabra Territory, the author met several men who have a scar received from a lion. Sometimes striped hyaenas and spotted hyaenas worabes, and black-backed jackals gedhala, approach to the enclosure of livestock at night, and sheep and goats are attacked especially. During the investigation period, five infant sheep were taken away one by one by a hyaena within a night.

Due to the scarcity of water and the poor vegetation, birds are also small in number. Crows arankes, ostriches guchi, vultures rumich, kori bustards arati randu, and other kinds of birds were observed. Since there are only a small number of birds throughout the investigated area, bird's meat occupies only a small part of the Gabra diet. When the people gain a kori bustard by accident, they eat it favoritely. As for the other way of utilizing birds, the Gabra herders sometimes bring back ostrich eggs to their main camp and mix them with a little water, to give to camels as a medicine.

LIVESTOCK

The Gabra keep camels, cattle, donkeys, sheep and goats. They neither cultivate land nor hunt animals for their subsistence; they depend almost entirely upon the products of their livestock. In this chapter, each livestock will be described respectively.

Camel

The Gabra keep dromedary camels (Camelus dromedarius). Both the males and females reach their sexual maturity at about the age of five, and remain sexually active until about twenty years old. Female camels give birth to an infant every two years. Male camels are castrated by having his scrotum cut with a knife at the age of four or five. Torry (1973) desctibes that sperm production is triggered in the rainy season, and the gestation period is about 13 lunar months. The lactation period is about 12 months, and weaning begins gradually after 3 months old.

People help the fertilization of male camels, and when a female camel gives birth, they help to take a new born infant out of the mother camel. Until one year old, infant camels are held in a different pen from that of adult camels, and suck their mother's milk every morning and evening. Camels are called in different terms according to their ages and sexes. As Table 2 indicates, the classification of camels made by the Gabra is simpler than that of the Rendille (Sato, 1980a). Camels are regularly watered every twelve days.

Torry reports in his paper that the Gabra in Kenya keep 52,000 heads of camels in all. One married man possessed 1 to 6 camels in the investigated area. Generally all the camels of one main camp are herded as a unit. The average number of camels in one main camp in the investigated area is about 25. In a satellite camp of only camels, 100 to 200 heads are herded as a unit.

Cattle

Usually several dozens of cattle are herded as a unit. Cows begin to have fecundity at about the age of three, and they give birth every 2 years. The gestation period is about 9 months and the lactation period, 8 months. Many male cattle are castrated at 2 years old. Cattle also have various names according to their ages and sexes like camels (Table 3).

Cattle are watered every two days. The frequency of watering for cattle is the highest of all livestock of the Gabra. The life span of cattle is about 13 years. The total number of cattle possessed by the Gabra is about 9,000 (Torry, 1973). Cattle are typical grazers and hardly browse shrubs or trees.

Sheep and Goat

Usually sheep and goats are flocked together. Each married man keeps 100 to 130 heads of sheep and goats. Sheep and goats become sexually active by the end of their first year. Females give birth every year and their gestation period is about 5 months. Their birth season is not clear. The average life span is 7 years. Females give the first birth in their first or second year. Males' castration is made around the

Table 2. Classification of camel

camel (generally)	*garr*
male	*kingele*
castrated male	*rotcho*
female	*orge*
nulliparous female	*goloms*
breeding female	*arra*
infant male	*gurbo*
female	?

Table 3. Classification of cattle

cattle (generally)	*lon*
male	*jibicha*
castrated male	*sanga*
female	*rada*
nulliparous female	*goloms*
breeding female	*sah*
infant	*yabi*

same age as that of females' first delivery. There are two methods of castration; one is to cut testicles with a knife, and the other is to cut different ducts over the scrota with a wooden mallet called tuma. Infants are sucked every morning and evening until 2 months old. After this stage, infants begin to graze near the camp without a herder until 4 or 5 months old. Sheep and goats are watered every four days.

Feeding style of sheep and goats are slightly different from each other. Goats browse more than sheep, but sheep are rather grazers like cattle, to the contrary. Varieties of classified names are shown in Table 4.

Food Plants of Livestock

Local and scientific terms of main food plants, eaten by livestock, are listed in Table 5. Identification of the plants is based on the work of Dale and Greenway (1961). As is shown in Table 5, food plants of cattle are less than those of other livestock. Most of these are species of grass. Food plants of camels are composed of shrubs and trees. Camels are browsing livestock in contrast to cattle, which are typical grazers. Food plants of goats show the most variety. Judging from the variety of food plants of goats, it can be said that the goat is the most adaptive livestock to the vegetation of the Gabra territory.

Daily Herding

Livestock are herded every morning after milking. In one main camp, large livestock, such as camels or cattle, are herded altogether as one unit. But sheep and goats are herded as one unit, and each flock is placed separately in different areas. Usually, one or two herdboys or girls go out with a flock. Camels, however, are pastured near the main camp without a herder in many cases. Infants of camels, cattle, goats and sheep are separated from the main herds and are also pastured near the camp without a herder. Pasture areas and main food plants of livestock in the areas are shown in Figure 4. Because of the small growing area of food plants of cattle, pasture area of cattle is limited. But sheep and goats are herded every day in scattered areas. Pasture areas of sheep and goats are wider than those of cattle and camels around the study camp.

RESIDENTIAL PATTERNS

Main Camp

The main camp of the Gabra is composed of huts constructed by women. The Gabra make their hut in the shape of a hemisphere, and a

Table 4. Classification of sheep and goat

	sheep	goat
sheep (generally)	*olichi*	
goat (generally)		*lales*
male	*elmo korma*	*korbeji korma*
castrated male	*elemiji*	*korbeji*
parous female	*olichi*	*lales*
nulliparous female	*kar sole*	*ilmele*
immature male	*elemiye*	*korbeji*
infant	*mole ola* or *emole*	*mole lalesa* or *emole*

Table 5. Food plants of livestock

vernacular name	scientific name	camel	cattle	sheep	goat
abalkaba	? (shrub)	+			
ade	*Salvadola perisca*	+			
agagaro	? (shrub)	+	+	+	+
alla	? (herb)		+	+	+
arfuk	? (grass)		+		
armaja	? (herb)				+
asura	? (shrub)	+			+
balambalu	? (herb)				+
buke	? (herb)				+
buyu	? (grass)		+	+	+
chinchilis	? (shrub)			+	+
chanchali	*Combretum denhardtiorum*	+		+	+
defuku	? (tree)	+		+	+
deka	*Grewia tenax*				+
dubarara	? (tree)	+		+	+
durte	*Salsola dendroides*	+			
galgalo	*Cadaba adenotricha*				+
idado	*Acacia senegal*				+
iddimar	? (grass)		+	+	+
ilam	? (tree)	+			+
ilmogol	? (grass)			+	+
jilbete midisiti	*Dasysphaera prostrata*	+		+	+
koncholo	*Stipagrostis uniplumis*			+	+
lafqabate	? (herb)			+	+
lamisho	? (herb))	+		+	+
madehl	*Cordia quarensis*	+		+	+
qubo	*Heliotropium steudneri*				+
qokomishi	*Heliotropium albohispidum*			+	+
qolatigarra	*Indigofera coeruba*	+		+	+
salim	*Acacia bussei*				+

man, his wife and their small children live in it (Fig.5,6). The Gabra hut is of the same type as the hut of other tribes of the Galla group (Anderson, 1978). The hut of the Gabra is not big; its diameter is 3 to 5 m long. In the hut, a fire place arranged with some rocks is placed on the right front side of the entrance. Usually, a big water container called bute is put at the opposite side of the fire place. A fire place equipped on the left side of the entrance is hardly observed. A woven milk container called chicho and other types of containers are hanged on the inner wall (Fig.7). The hut is called waro. There are two simple beds in the interior of the hut, the left one being the sleeping place of husband. Lower part of the wall is made of goat or sheep skin, and the mats of woven sisal fiber.

When people build a hut, several sticks are put on the ground as its frame at first. The other ends of the sticks are tied one another. After the frame is completed, sheep and goat skins are put on the frame to make the wall.

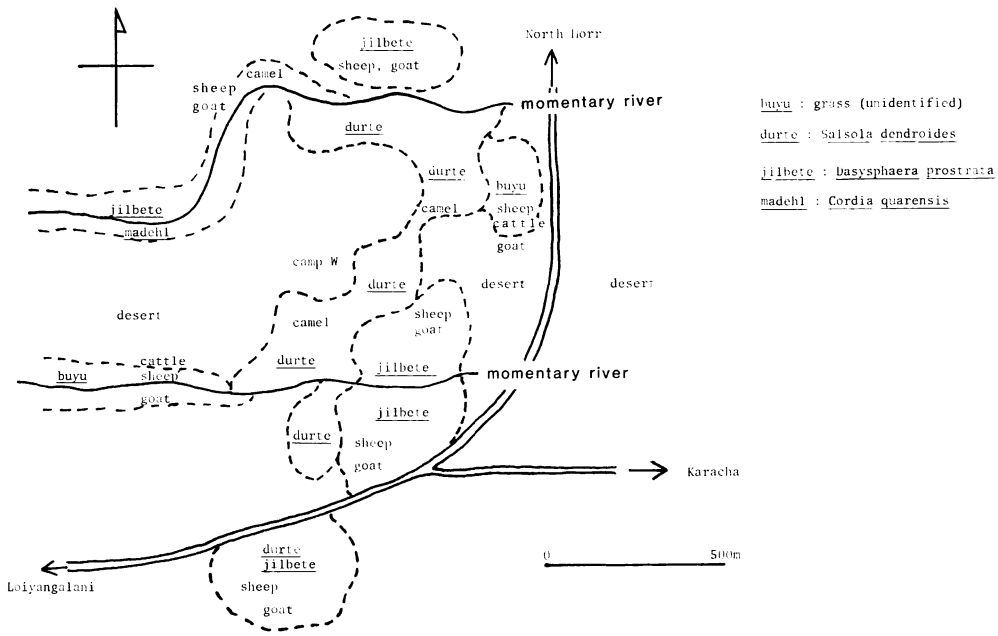

Fig. 4. Main toof plants and pasture areas of livestock near the main camp W.

Building a hut is a woman's task. When the people move to a new site, all the materials of the hut, various containers, and all other household utensils are packed and put on a camel. A woman breaks up the hut of her family, and sometimes other women or children may help her. Men do not usually help his wife to construct or to break up the hut.

The entrance of the hut always faces to the west. But in case that huts are arranged on a line running from east to west, the entrance is always placed on the north. The number and arrangement of the huts in one main camp are not constant. There exists no fence except for the pens of livestock around the main camp.

According to Torry (1976), the number of huts in one main camp ranges from 5 to 41; 17 on an average. According to the author's field survey, the number of huts in one main camp is 3 to 30, and average number is 8.9 (Table 6). The author's result is a little smaller in number than that of Torry. In many cases, several main camps exist within hundreds of meters from one another (Fig.8).

A main camp is called ola, and is usually addressed after the name of a representative man in the camp, for example, ola Walio Fila (ola of Walio Fila), ola Isako Guyo (ola of Isako Guyo), etc.

The composition of a main camp changes frequently. A man who wants to join a certain camp should ask for the representative man beforehand. Then, after the men of the camp agree to this, the man and his family can join the camp. New joining is carried out on the following day. On that day the hut of the man is carried into the camp, every woman of the camp binds a sheep near the entrance of her hut in the

Fig. 5. The Gabra Hut.

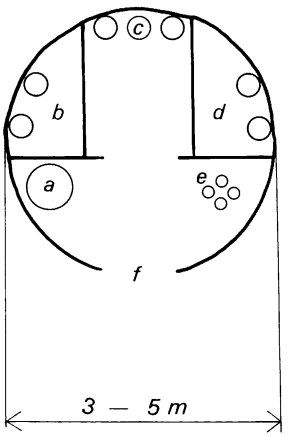

Fig. 6. Cross section of the hut.

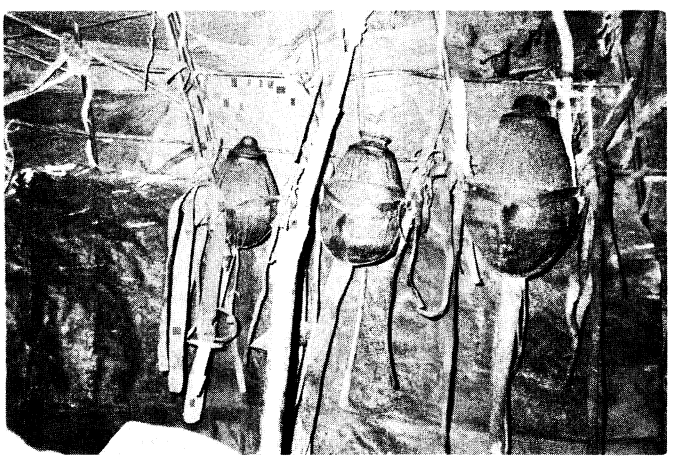

Fig. 7. Mild containers on the inner wall.

morning, and pours a little milk on its head, back, abdomen and buttocks. A couple of women help her to build the hut. After the hut is completed, men sit around the hut and drink a cup of hot milk, with some coffee beans in it. During the time, chewing tobacco is handed around among the men. Five or six men, one by one, repeatedly chant a prayer of joining and a prayer for peace of the camp. The man joining the camp sacrifices one of his small stock and offers cooked meat to the men. No ceremony, however, is observed in the case of leaving the camp. The day after the hut and the enclosure of sheep and goats are newly constructed, a simple ceremony is performed by women. In the ceremony, big water containers are brought into the new hut through the crude fences, which were made on the previous day (Fig.9).

The formation of enclosures and huts in a main camp of the study area is shown in Figure 10. A main camp is never fixed at the same

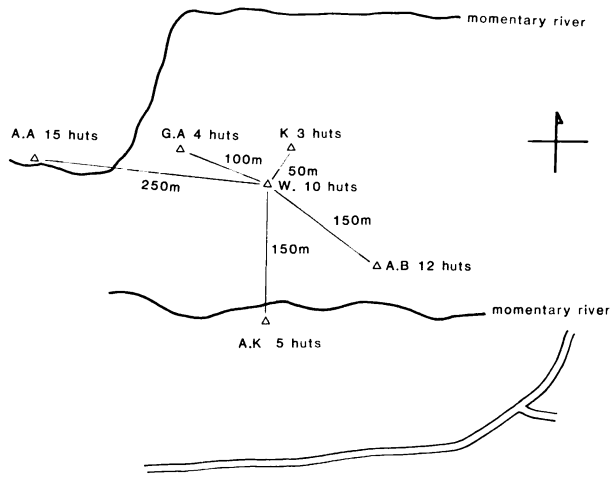

Fig. 8. Distribution of main camps.

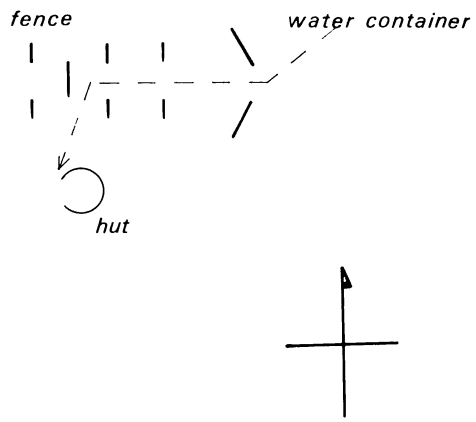

Fig. 9. Formation of fences arranged for joining.

place for a long period of time. It is frequently moved from place to place according to the conditions of pastures and enclosures of livestock. When long-distant movement is not needed, short-distant movement is carried out. Short-distant movement observed by the author is shown in Figure 11. There is no laid-down rule as to the arrangement of the huts. The arrangement of huts is classified into the following three types.

(1) North-south line
(2) East-west line
(3) Rough circle (see Figure 12)

Except for stock enclosures, all the other types of fence are never made in a main camp. Location of each hut is primarily dependent on the topography and vegetation of the camp site. In fact, the location of huts after a short-distant movement is always varied as is clearly shown in

Table 6. Number of households in a main camp

Imai		Torry, 1973	
camp	households	camp	households
IF	23	A	41
GA	10	B	24
WG	10	C	27
K	3	D	32
I	4	E	19
AA	15	F	14
AB	12	G	10
AK	5	W	40
YA	30	X	40
MA	8	XA	11
GG	3	KG	12
SH	12	DW	10
WA	7	AW	12
WL	15	MG	16
DM	4	YB	8
OD	3	SA	17
UO	2	EH	8
UW	2	EG	9
DJ	6	MB	16
NJ	4	GI	10
		KR	13
		DG	7
		DW	15
		SI	6
		PW	9
average	8.9	average	17.2

Figure 11. For the site of the hut, the place where water is liable to remain after rainfall is avoided.

Huts are taken to pieces and loaded on camels to make a long-distant movement. A new camp site is decided beforehand. When the distance to a good pastureland is far from the main camp, and the people feel the necessity to move, one or two men go out to look into the condition of new pasturelands, the degree of concentration of other camps and livestock, and quantity of available water. This inspection is called abuhl. In many cases, a whole day is spent for one abuhl. Men coming to the site for movement visit the camps which were already moved there before, and ask the men of the camps whether they accept them to construct a new main camp near their camps. They return to their own camp and report the result of the abuhl to other men. Men hold the meeting to discuss the result of abuhl. When the decision of movement toward a new site is made, the date of the movement is discussed, in connection with the schedule of watering their livestock. The huts are broken up by women on the day of the move, and men start to the new site with sheep and goats. In many cases, adult men and small children take infant animals of small stock to the new site, leaving main herds to herdboys. After the new camp site is decided by the men, a prayer for happiness in the new site is chanted by several men and repeated one man by one. Soon after the arrival of camels, which are loaded with materials of the huts and are led by women, women start to build huts.

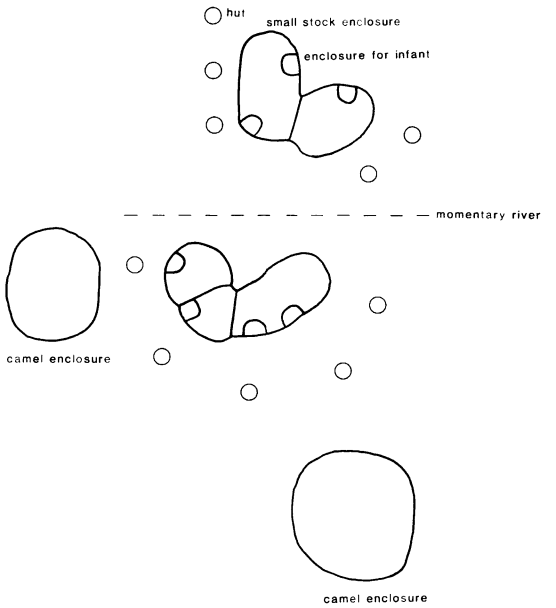

Fig. 10. Formation of huts and livestock enclosure.

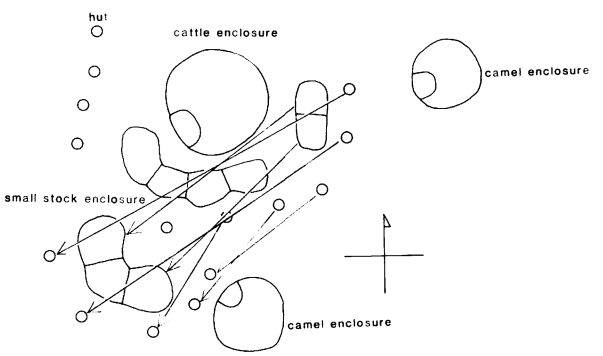

Fig. 11. Short distance movement of the huts and fences in September, 1980.

Satellite Camp

The satellite camp is the other type of residence of the Gabra. It is established for the purpose of herding livestock in good pastureland. As is described above, the main camp is also established in good pastureland. But a hut cannot be constructed in places where there are no usable water points nearby. In such places, they establish a satellite camp instead of a main camp. Then the people in the satellite camp far from a well or water point must live exclusively on livestock milk or cattle blood for several days without water. At night, all the people working in the satellite camp sleep by the outside spot of the livestock enclosure, called gose. Herdboys always sleep at gose every night even

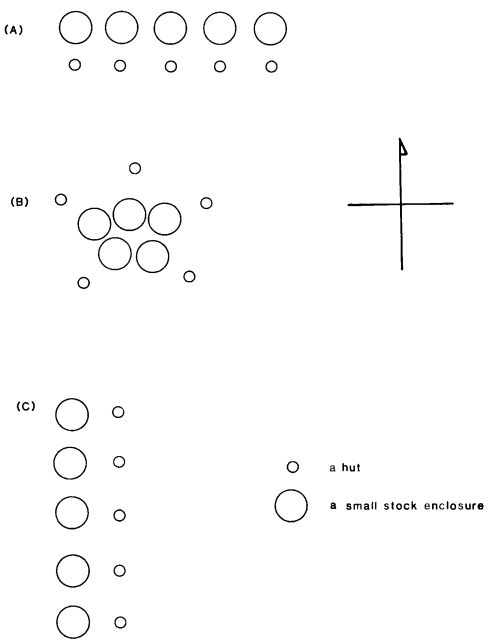

Fig. 12. Three types of hut's distribution in one main camp.

in a main camp, instead of at their mother's huts.

A satellite camp of cattle or camels is called fora, and that of sheep and goats is called arjalla. A satellite camp of cattle alone is called fora loni, and that of camels, fora garr. The one, which is comprised of only goats, is called arjalleh.

Even if camels are added to arjalla, it is also called arjalla. But if huts are constructed in arjalla, it is called ola A, which is the same as the name used for a main camp A. If a man used to belong to a different ola before, the former name of the arjalla is unchangedly used by everyone of the camp.

IDEOLOGY

In former chapters, notions and ways of thinking of the Gabra were not mentioned orderly. These matters, however, are important to understand the life and society of the Gabra.

The investigation period of the author is not long enough to collect sufficient data of their notions and ways of thinking. In this chapter, some aspects concerning the ideology of the Gabra will be described briefly.

Daily greetings of the Gabra must be mentioned here a little. The Gabra have many kinds of greetings in their daily life. When people encounter a person or group of persons, they first exchange fixed greetings with each other. Greeting terms are not used singly. Whenever one person greet to other person with a particular phrase, a greeted person must also reply with a fixed greeting phrase. There are many such sets of fixed call and reply of greetings among the Gabra. Not all

the sets of greetings could be collected during the investigation period. Table 7 indicates fixed greeting sets collected by the author. In many cases, the order of the sets is fixed roughly. The structure and function of greetings of the Gabra in their life require a further investigation.

The Gabra have a unique lunar calendar; the name of each month is indicated in Table 8. The name and the sequence are similar to those indicated by Torry (Torry, 1973). In the investigation period, Jibor began on the 7th of December, 1980. The months of the Gabra ceremonies are fixed. Solio and circumcision are both performed in Somlehl and Yaga. Solio is the ceremony, in which each household slaughters a small stock and all men sit around each hut to pray for peace of the main camp and then to eat the meat of sacrificed animals. A household, which does not have any male members on the day of Solio, cannot make a sacrifice in the ceremony. Another ceremony of the Gabra is Almhado. Men gather and sit around outside, and drink camel milk during the ceremony. Spencer (1973) described Solio and Almhado of the Rendille. Nevertheless, the details of these two ceremonies of the Rendille could not be confirmed.

The Gabra are prohibited to move their huts on certain days according to the lunar stage as well as the unique lunar calendar. Generally, moving of the hut is under a taboo on 5th, 10th and 15th of their lunar days. People will never greet those who move their huts on such days.

When the Gabra slaughter their livestock, they read their fortune according to the distribution of its internal organs (Fig. 13). The way of their fortune-telling has not been clarified. In the author's observations, the small intestine was regarded as livestock of the Gabra, and the large intestine was explained as livestock enclosures. Movement of the Dasanech or the Rendille were judged from the location of intestines. Slender vessels seen on the surface of the intestines and stomach are, in many cases, judged as a rainfall in the near future.

In the Gabra, there are several prohibitions of eating certain parts of slaughtered animals. Although the author could not collect all the food prohibitions, the following items are at least prohibited to particular persons.

1. The first son is prohibited to eat kale (unidentified).
2. A person who put a person or animal to death is prohibited to eat the limbs (irre).
3. A person, who is suffering from eye diseases and having medical treatment, is prohibited to eat a head of livestock.
4. A burnt person or persons of dolio clan in Algana phratry are prohibited to have the pancreas (rajeji).
5. persons of adalame clan in Algana phratry are prohibited to have the rumen (gadames).
6. Persons of garabaya clan in Gara phratry are prohibited to have the heart (onne).
7. A person of garora clan in Algana phratry whose livestock has gone astray is prohibited to have chewing tobacco until his lost livestock returns to him. Tobacco must be put aside from his fire place for a month. People believe that, if he does not chew tobacco during this period, his lost livestock will never be attacked by a hyaena or a lion.

Finally, folk songs of the Gabra will be roughly described. Like other East African pastoralists, the Gabra men sing songs of their livestock. They themselves assert that, although there are many songs of cattle in the Boran, the Gabra have more camel songs. In reality, however, the Gabra sing the songs of goats more favoritely. Songs of young men and of their main camp (goup), and love songs (faru) are also sung frequently in addition to the livestock songs. In many cases, songs

Table 7. Examples of greeting frequently used

greeting and its reply	remark
Bara rep. e bara	to an older man
Jaba Bartu Jabdu	to a younger man to an older woman to a younger woman
Galchumi nagaya rep. nagaya nagaya	Are your livestock all right?
Elmo rep. hato or ako	from an older woman to a younger man
Abo jaba rep. e bara	from an older man to a younger man
Babarow Jajabow Burtin nagaya	to several persons to younger persons to a circumcised person
Faiya rep. Faiya at faiya	Are you all right?
Nageni badada rep. badada kesan badada	
Nageni dansa rep. dansa at dansa	
Olin nagaya rep. nagaya nagaya	
Yoiya rep. yoiya	
Dado rep. dado san dado	
Daim ulga rep. ulga ke ulga	Are your small children all right?
Boka ko bate rep. ya ko bate at ko bate	How is th rain?
Nagayan bul rep. ben nagayati	Good bye.
Nagaya galte rep. nagayan gal	How was your travel?
Kofte rep. ya kof	Have you eaten enough?
Dalala dalala	I have enjoyed tombacco.

are sung at night by young men at the side of the livestock enclosure. The people tend to sing work songs when they draw water from a well to water their livestock.

Table 8. The lunar calendar of the Gabra

Imai	Torry, 1973	English
somlehl	Didial	January
somlehl	Arafa	February
som	Yakaa	March
fram	Ragara	April
hidial	Ragara	May
yarafa	Faite	June
yaga	Jibor	July
ragal	Jibor	August
ragal	Sombder	September
faite	Sombder	October
jibor	Som	November
jibor	Fram	December

Fig. 13. Fortune-telling from the lump of goat's organs.

DIETARY PATTERNS

Diet of the Gabra is comprised of the products of their livestock, such as milk, meat, blood, internal organs and fat. Tea and sugar are their favorite foods, and maize flour (posho) is also added supplementarily to them. In ceremonies, coffee beans (bune) are put in hot water with milk.

Milk is usually drunk either by itself or with tea. Fermented sour

milk is the only drink of any milk treatment for the Gabra. The fermented milk is called ittitu. Milk is usually drunk after being fumigated indirectly with wood smoke in milk containers. The fumigation of milk container is called qolasun, and is made almost every day. In main camps, women fumigate milk in the container, but in fora and arjalla, qolasun is done by boys and girls. Sato (1980b) mentioned the same method of fumigation among the Rendille. The Gabra believe that milk is flavoured and stopped to ferment by qolasun. Acacia horrida, Cordia quarensis and Boscia minimifolia are used as woods for fumigation (Table 9). These three species are different from those used by the Rendille (Sato, 1980b). Herders bring the woods of qolasun to the camp.

Qolasun is done as follows; twigs for fumigation are set in the fire. When they make some embers, they put them into a milk container called sololo, place a lid on it, and shake it by hand. Since the sololo has a little water in it, it becomes full of vapour in the container. In the case of a cow milking container ohole, a longer twig is used for qolasun. A little water is put into the ohole, and the inside of it is rubbed with the twig. The water becomes black with charcoal, and the black water is sunk into the container. Thus, the inside surface of ohole is usually black. When raw milk is put into the container without qolasun, it grows into ittitu in a day. Ittitu is not made frequently, because the people make it only when they obtain sufficient raw milk. Ittitu, mixed with water, is called anaklau and drunk frequently. Usually the Gabra do not drink water by itself. They drink water with a little milk and call it pisan, which means "water" in the Boran language. Herders of small stock get a little milk from sheep to appease their thirst in their afternoon resting time.

The Gabra are fond of meat. When the preserved meat is all eaten up, they slaughter a goat or sheep for a new supply. They seldom slaughter camels or cattle for this purpose. Camels and cattle are taken to North Horr for sale, instead of being killed. A sheep or a goat are slaughtered in every household. The Gabra like the cattle milk best, and then goat's, sheep's and camel's, in this order. The order of their favorite meat is goat's, cattle's, sheep's and camel's. Sato (1980b) pointed out that the Rendille like fresh and sour milk of camel best. Although the Gabra are camel herders like the Rendille, their fondness for the milk and meat of camels is weaker than that for any other kinds of livestock.

They kill livestock by cutting the throat, and then put their carcasses laid on the ground. Their blood dhik is poured into a container, and is churned and congealed. Churned blood is called lap. The milk mixed with blood is called galgach. Churned blood is also fried

Table 9. List of wild plants used for milk fumigation by the Gabra and the Rendille

scientific name	people	vernacular name
Acacia horrida	Gabra	chachanneh
Cordia quarensis	Gabra	madehl
Boscia minimifolia	Gabra	dumasho
Cadaba ruspolii	Rendille	golodaat
Maerus seseiliflora	Rendille	dume
Acacia mellifera	Rendille	bilihin
Cordia simensis	Rendille	gaer
Craibia laurentii	Rendille	ilot

Source: Data based on original field notes and Sato, 1980b

with fat. Occasionally all blood is given to dogs. Hind legs of the killed livestock are teared, and the fat of buttocks and a penis are cut off. Their upside skin is stripped from the abdomen to the back. After stripping the skin, the tips of the toes are cut, and upside legs are cut out from the joints. The ribs are taken out, and then the internal organs are taken outside. A fortune-telling from the lump of organs is told by some old men (Fig.13). After the fortune-telling, the neck of the carcass is cut and other parts of the body are skinned. Finally, the ribs are cut into small parts. The liver and heart are fried a little and eaten. Contents of the stomach are roughly taken away, and the stomach is taken out and boiled. The small ribs are also boiled with the stomach. Other bones are cooked in accordance with how many persons are expected to eat. The meat which is not consumed immediately is sliced long and slender, and hung inside the hut. Because of dry air and regular wind, the meat becomes dry in a short time. The fat of sheep is put in a fat container, called dibe, kil, or buda. There is another method of meat preservation except for drying. Small pieces of meat are wrapped in the stomach and boiled, and finally hung in the hut. The food made by this method is called kidaji. The neck is cooked and eaten in the same way. The head is boiled after the hair is burned.

Another cooking method is to fry with fat. Dried meat prepared by boiling and frying is called qulqul. Fried and pounded meat is called dupe. The Gabra do not use much seasoning. Sometimes, only a little quantity of salt or chili is added to the meat.

Skins of small stock are spread and pinned on the ground by short pegs of twigs, and dried (Fig.14). The dried skins are used to make a wall of the hut or a mat, or sold to local shops. Skins of camels or cattle are spread and dried on shrubs. Such big skins are used as sleeping mats.

Like other East-African pastoralists, the Gabra take blood from their livestock for food. Blood is not so important in the dietary life of the Gabra, both in main camps and satellite camps of small stock. In the cattle camp (fora loni), cattle are bled more frequently than any other kinds of livestock. Blood is either drunk alone or with milk. Bleeding could not be observed directly during the investigation period. Herdboys, having some blood at the previous night, eat nothing in the following

Fig. 14. Drying activity of a goat's skin.

morning and only drink a cup of tea at noon, which they think is enough for them.

In addition to these foods, they have maize flour (posho), which is the only one agricultural product they can get. As they do not cultivate at all, they must buy maize flour (posho) at the stores in Marsabit, Maikona, Karacha and North Horr. They also buy maize grains there. Their cash income is only gained through the sale of livestock and milk, and is extremely irregular and limited.

According to the author's observations, most of their cash income was spent on purchasing sugar, while only a small part was spent on maize. When people get maize flour (posho), they put it in hot water with tea and drink it at once. Posho occupies only a small part of the Gabra diet. Sato (1980a) described that more quantity of posho is consumed in the Rendille settlement.

The quantity of food consumed daily by the Gabra will be briefly described here. During the investigation period, both the people and their livestock were allotted to different areas. Table 10 shows the distribution of the people and their livestock. The people apportioned to each satellite camp obtain food independently.

In main camp W, which was the subject of the author's study, there were 17 heads of infant cattle. Not all the mother cows were milked; in fact, only three cows were milked during the investigation period. There were 4 infant camels in all, and only two mother camels supplied the people with milk.

Cattle milk is poured into a container ohole, which is made of cattle or giraffe leather. About one litre of milk is obtained from one cow per one milking time. Camel milk is poured into a container called gorfa. About 1.5 litres of milk are taken at a time, but after a rainfall, the amount increases up to three litres. Infants of both cattle and camels are sucked for a minute at first. Then they are kept away from the nipples during the milking time, after which, infants are allowed to suck again. They do not milk as much as possible, because an adequate quantity of milk must always be reserved for their infants.

In the case of goats, people take out an infant from the infant enclosure, and call the name of its mother. When the called mother goat comes, the infant is allowed to suck for a while, and it can suck even during the milking time. One female small stock milks about 100 ml at a time. But the number of milked females per day is not fixed, and the quantity of milk per female also varies. The average amount of milk from one flock of small stock per milking time is estimated approximately at 1.5 litres, according to the author's observation of 6 flocks, each of which has about 120 heads. According to Dahl and Hjort(1976), the Masai and the Boran hardly milk sheep, and sheep milk is less in quantity than goat milk, which also confirms to the author's observation of the Gabra. The Gabra do not freely allot an infant sheep to its ewe, except when, after opening the infant sheep enclosure in the evening, infant sheep are allowed to suck from their ewes. Sheep milk is not served for household members, because sheep is to be milked only for unexpected guests.

Livestock meat occupies a major part of the Gabra diet. From September 8th to 25th, 1980, one head of cattle and 3 goats were slaughtered merely for food. From November 3rd to 26th, 13 of their goats and sheep were slaughtered as a sacrifice for Solio ceremony. During the first period of the investigation, almost all the people and livestock in the main camp were gathered together. Since the bleeding of cattle was not observed at that time, no major foods other than milk and meats were served. The people of camp W bought a little amount of sugar and maize flour (posho), which they ate with milk and meat. Neither wild animals nor plants were eaten in this period. The total amount of sugar and

maize flour (posho) taken during the period was difficult to know accurately, because their daily consumption of sugar and maize flour was irregular. The author estimated the total quantity of sugar, consumed in camp W during each period, as 5 kg, and that of posho, 10 kg. The amount of edible part of cattle is estimated at 100 kg, and that of a sheep or a goat, 15 kg.

The quantity of all kinds of foods, taken by the people of camp W in these periods, is calculated as follows.

During the period from September 8th to 25th, (18 days);

cattle milk

1 (litre) x 2 (milking times of a day: morning and evening) x 18 (days) = 36 litre/head.

camel milk

1.5 x 2 x 18 = 54 l/head

small stock milk

1.5 x 2 x 36 = 54 l/flock

Although there were 36 people in all, 4 unweaned children should be excluded from the number. Then the number of people who actually consumed milk and meat in camp W was 32. The average quantity of food taken by a person per day during this period is calculated as follows:

cattle milk

1 x 2 x 18 x 3 ÷ (18 x 32) = 187.5 ml/person/day

camel milk

1.5 x 2 x 18 x 2 ÷ (18 x 32) = 187.5 ml/person/day

small stock milk

1.5 x 2 x 18 x 6 ÷ (18 x 32) = 562.5 ml/person/day

(The total number of small stock flock in camp W is 6.)

cattle meat

100 ÷ (18 x 32) = 173.6 g/person/day

small stock meat

15 x 3 ÷ (18 x 32) = 78.1 g/person/day

sugar

5 ÷ (18 x 32) = 8.68 g/person/day

maize flour

10 ÷ (18 x 32) = 17.36 g/person/day

In the second period, which covers 24 days from November 3rd to 26th, the cattle herd was moved to the fora as Table 10 indicates, and one boy was sent there for herding. Another boy and a girl were staying in North Horr in that period (Fig.15). The quantity of foods gained during this period is calculated as follows:

The quantity of maize flour and sugar is assumed as 10 kg and 5 kg, respectively.

cattle milk

0 litre

camel milk

(1.5 x 2 x 24 x 2) ÷ (24 x 29) = 206.89 ml/person/day

small stock milk

(1.5 x 2 x 24 x 6) ÷ (24 x 29) = 620.69 ml/person/day

cattle meat

0 kg

small stock meat

15 x 13 ÷ (24 x 29) = 280.17 g/person/day

sugar

5 ÷ (24 x 29) = 7.18 g/person/day

maize flour

10 ÷ (24 x 29) = 14.36 g/person/day

As is indicated above, maize flour and sugar occupy only a negligible part in the diet of the Gabra at the main camp. Then it is

Table 10. Distribution of livestock and persons in a camp

	September	October	November	Dec.1-15	Dec.16-31	January
cattle	-	+	+	+	+	-
camel	-	-	-	-	-	-
sheep and goats	-	-	-	+	+	+
persons in the main camp	36	33	33	22	17 - 22	17 - 25
persons in the cattle camp	0	2 - 3	2 - 3	2 - 3	2 - 3	0
persons in the sheep and goats camp A				7 - 8	0	0
B1					4 - 5	0
B2					4 - 5	4 - 5
C					4 - 5	5 - 8

+, in the satellite camp; -, in the main camp

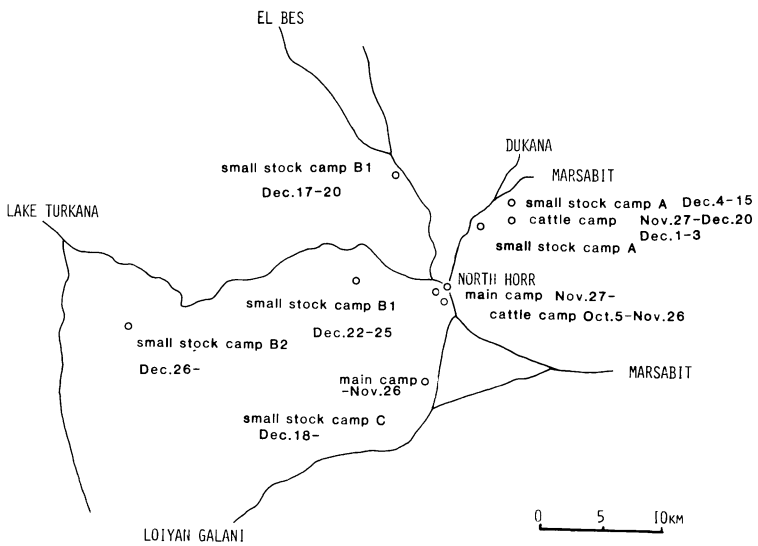

Fig. 15. Location of livestock camp.

impossible to say that the subsistence base of the Gabra is the maize flour (posho) or some other agricultural products. This fact is in clear contrast to the case of the Rendille, who mainly depend on the maize flour in their settlement (Sato, 1980a). The milk and meat of the small stock occupy a greater part in the Gabra diet. Since the majority of milk is obtained from goats, it can even be stated that the Gabra mainly depend on the products from goats.

CONCLUSION

From the facts described above, it is clear that the Gabra live on their livestock, and that they are well adapted to their arid natural environment. Hence the ecological factors that influence their life must be examined carefully. For example, due to the arid and uneven environment, the composition of their main camp changes more frequently than that of other pastoral peoples, such as the Karimojong, the Turkana, and the Boran (Dyson-Hudson, N., 1966, Gulliver, 1955, Baxter, 1979). Figure 15 indicates that the division of camp W, to fora and arjalla, and the migrated sites of the main camp W itself. Frequent change of their camp site is primarily due to the change of the ecological condition, i.e. the condition of their pastureland. Migration of the whole main camp, caused by some social reasons, was not observed. Migrations of individual households because of marriage or death of a married man were confirmed in the investigation period, but these were not due to ecological reasons.

As is already described, main camps are situated at several hundred meters away from each other (Fig.8). This is due to the convenience of stock management rather than the rule of the society.

According to Torry (1973), main camps of the Gabra are organized of the agnatic or affined homesteads. As is shown in Figure 16, some relationships of affined households are confirmed, the connection through cooperation of the headmen in stock management must be more closely examined. Such a point of view may bring us an instructive understanding about the Gabra society. In the Gabra main camp, there are many cases in which men leave the main camp. The man having a different opinion about herding strategy from that of other men may leave the camp easily.

As is described in the former chapters, the Gabra keep camels, cattle, sheep and goats as their subsistence base. They can survive, in such arid environment where cultivation and hunting are impossible, only by depending on the products of their livestock. In accordance with the

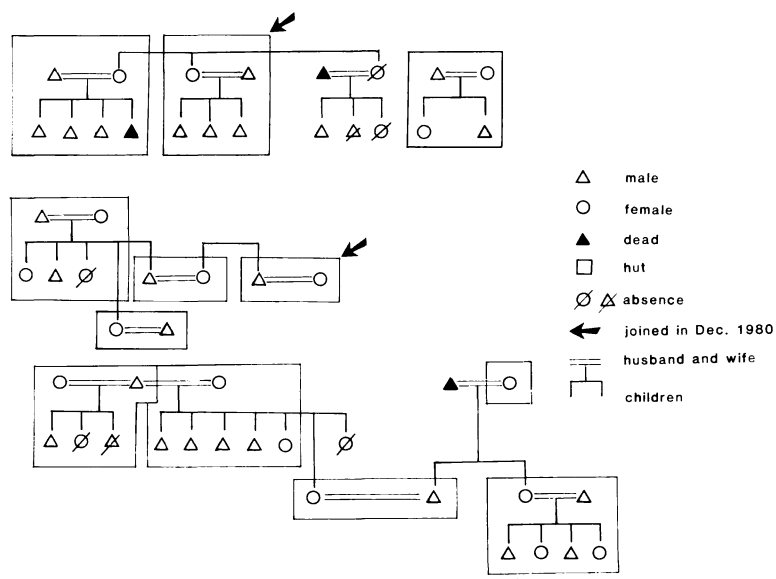

Fig. 16. Kinship relationships in the main camp W.

ecology of each livestock, the Gabra select the suitable natural environment for their livestock, and make their living adaptive.

They do not depend on one particular kind of livestock. Each kind of livestock is not distributed evenly. There are a lot of small stock flocks around North Horr. Many camels are herded in the Chalbi Desert. The larger number of cattle are herded in Ethiopia. It is true that the Gabra want to possess as many livestock as possible, but the most favourite livestock for them are cattle and goats. Camels and sheep are less desirable than cattle and goats.

Camels are valuable livestock for the transportation of water or hut materials. Furthermore camels are more adaptive than cattle in an arid environment. The amount of milk and meat gained from camels is equal to that of cattle, but camels are less adaptive to a higher land. The management of camels is difficult and their reproduction rate is low. Sheep supply more fat than goats, but the amount of milk is less than that of goats. Importance of goats in the Gabra diet has already been clarified in the preceding chapter. This fact is strongly felt by the Gabra themselves, as is already mentioned.

The Gabra is characterized as camel herding people together with the neighbouring Rendille. But, by depending on camels alone, the Gabra could not survive in such severe environment. It can then be said that the Gabra sufficiently recognize the ecology of each livestock and environmental conditions, and perform their unique pastoralism among the East African pastoralists.

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